

CITY OF FREMONT

PUBLIC SAFETY

UNMANNED AERIAL SYSTEMS



WHAT A UAS IS...

- An aerial perspective
- A tool to enhance situational awareness
- A way to improve personnel safety
- A tool to locate victims in need of rescue and that are lost or missing

WHAT A UAS ISN'T...

- Not weaponized
- Not used as a platform for random surveillance activities
- Not used to intercept electronic communications
- Not excluded from privacy laws

INTENDED USE

Police

- Public safety and life preservation
- Monitor barricaded suspects, hostage situations, active shooters, apprehension of armed and dangerous and/or violent fleeing suspects, high-risk search warrants
- Evaluate suspected explosive devices
- Post-incident crime scene preservation and documentation



INTENDED USE

Police

- Pursuant to a search warrant
- Search for missing children or elderly
- Search for fleeing suspects
- Probable cause to believe the UAS will record images or events that tend to show that a felony has been committed or is being committed
- Training



INTENDED USE

Fire

- Public safety and life preservation
- Locate and assess victims in need of rescue
- Monitor integrity of buildings on fire
- Account for personnel on the fireground
- Locate seat of fire in larger structures



INTENDED USE

Fire

- Assess & monitor hazardous material releases
- Natural disaster monitoring
- Assist Truck Company rooftop operations
- Mapping
- Wildland fires
- Training



CAPABILITIES

- Can enter atmospheres that are hazardous to personnel
- Can provide HD video/pictures
- Can provide thermal imaging
- Can carry an external load, ie: flotation device, radio, etc.
- Can monitor or assess an area that is potentially dangerous
- Can operate in virtually all weather conditions (M210)
- Can warn the pilot of approaching aircraft and can warn other aircraft in the area of its location

CAPABILITIES

- Can take off and land autonomously
- Will warn the pilot when approaching restricted airspace, and stop the aircraft from entering
- Will warn the pilot when approaching altitude maximums
- Will passively avoid collisions with obstacles in its path
- Will autonomously return home when battery level is low and will always reserve enough for the return flight

INSPIRE 1

WEIGHT

6 LBS

MAX SPEED

APPROX. 50 MPH

FLIGHT TIME

APPROX. 20 MIN.

MAX RANGE

APPROX. 1.5 MILES



PHANTOM 4

WEIGHT

3 LBS

MAX SPEED

APPROX. 45 MPH

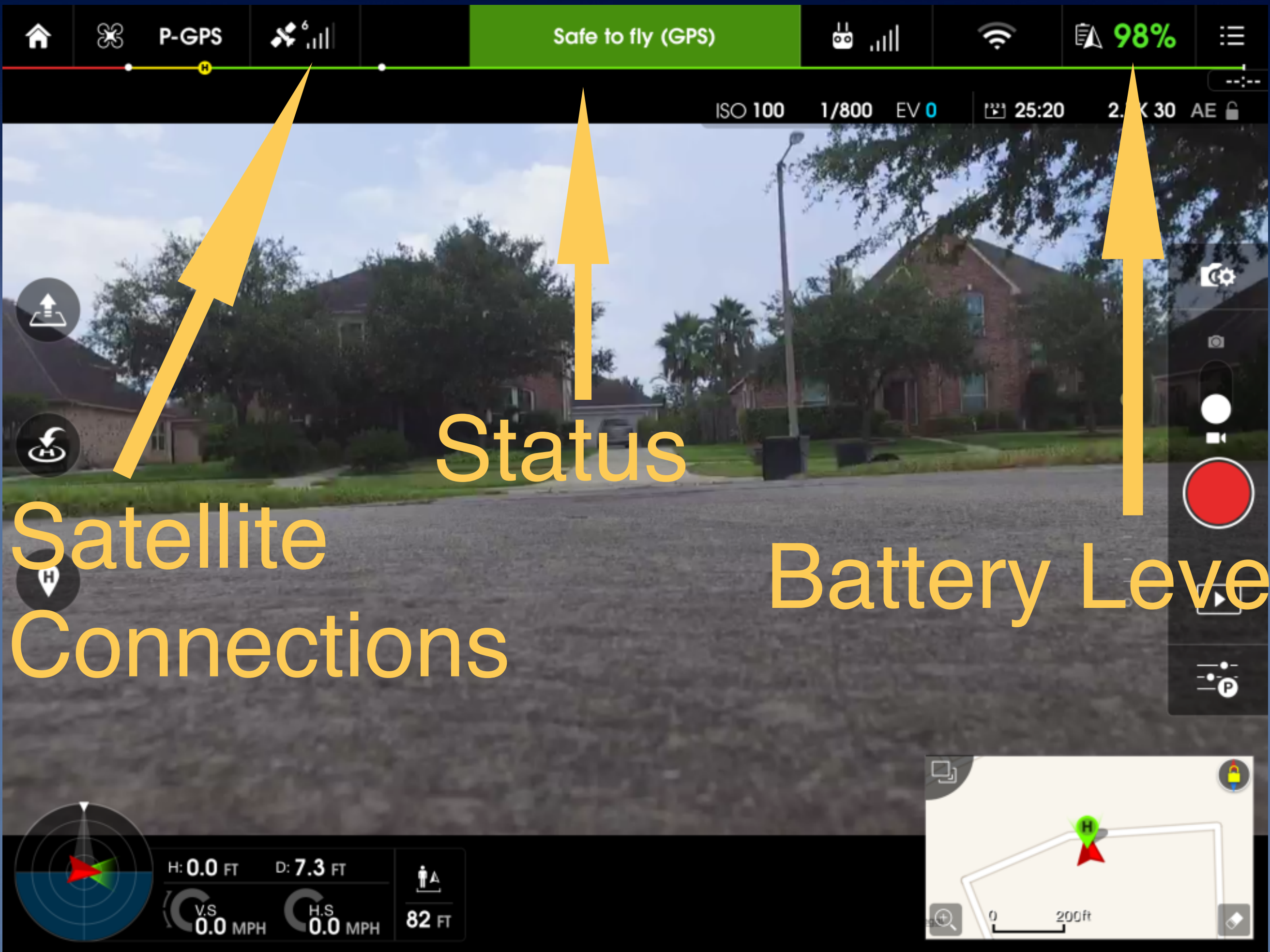
FLIGHT TIME

APPROX. 28 MIN.

MAX RANGE

APPROX. 3 MILES





Satellite
Connections

Status

Battery Level



P-GPS



Safe to fly (GPS)



98%



ISO 100

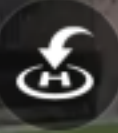
1/800

EV 0

25:20

2.7K 30

AE



Auto Take-Off

Return To Home

Fly To Waypoint



H: 0.0 FT

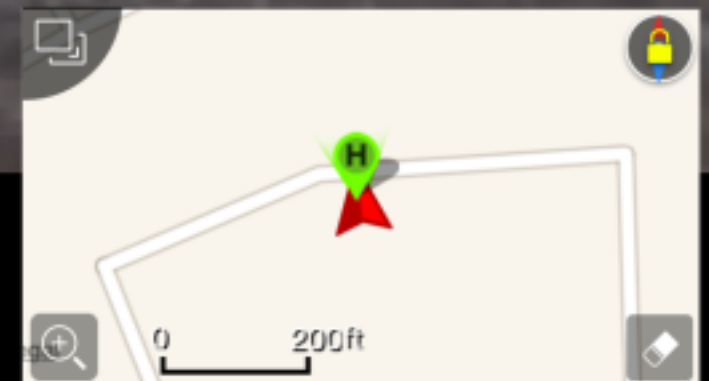
D: 7.3 FT

V.S
0.0 MPH

H.S
0.0 MPH



82 FT





Direction

Map

Avionics







THE CAMERAS



PILOT REQUIREMENTS



FREMONT FIRE DEPARTMENT UAS Pilot Requirements

Fremont Fire Department employees shall show proficiency in the following items. Once completed, your name will be submitted as certified pilots working under FFD's COA.

- ☐ 16 hours of documented flight time
- ☐ Operate the DJIGO application
- ☐ Operate the DJIGO4 application
- ☐ Navigate and utilize 1800wxbrief website
- ☐ Operate the AIRMAP application
- ☐ Navigate the Drone logbook application
- ☐ Demonstrate how to file a NOTAM
- ☐ Demonstrate how to contact local ATC
- ☐ Have a working knowledge of FFD's and FPD's policy and procedures
- ☐ Safely operate all UAV platforms and supporting systems

PILOT SIGN OFF



Fire Department

3300 Capitol Ave, P.O. Box 5006, Fremont, CA 94537-5006
www.fremont.gov



UAS Pilot Sign-Off Sheet

The following requirements must be completed to obtain UAS Pilot status. This form, completed in full, allows for the full operation and use of the department UAS equipment.

- ☐ 1. Attend the approved 16 hour FAA training class
- ☐ 2. Log 16 hours of documented flight time on Fremont's training drone or like system
- ☐ 3. Be proficient in the use all software, hardware, applications and documentation.
- ☐ 4. Pass the approved flight test with the Lead pilot
- ☐ 5. Have all documentation signed and on file with FFD Training Division

Signatures

UAS Pilot (Print)

UAS Pilot (Signature)

Lead UAS Pilot (Print)

Lead UAS Pilot (Signature)

Battalion Chief – Training (Print)

Battalion Chief – Training (Signature)

Division Chief – Operations (Print)

Division Chief – Operations (Signature)

Division Chief – Training (Print)

Division Chief – Training (Signature)

FREMONT FIRE DEPARTMENT

FFD-

UAS Pilot Sign-Off Sheet
Rev. 02/12/17

OBSERVER SIGN OFF



Fire Department

3300 Capitol Ave, P.O. Box 5006, Fremont, CA 94537-5006
www.fremont.gov



UAS Observer Sign-Off Sheet

The following requirements must be completed to obtain UAS Observer status. This form, completed in full, allows for the approved person to serve as an Observer for the pilot of the FFD UAS system.

- ☐ 1. Attend the approved 16 hour FAA training class
- ☐ 2. Log 4 hours of documented flight time on Fremont's training drone or like system
- ☐ 3. Be proficient in the use all software, hardware, applications and documentation.
- ☐ 4. Pass the approved Observer test with the Lead pilot
- ☐ 5. Have all documentation signed and on file with FFD Training Division

Signatures

UAS Observer (Print)

UAS Observer (Signature)

Lead UAS Pilot (Print)

Lead UAS Pilot (Signature)

Battalion Chief – Training (Print)

Battalion Chief – Training (Signature)

Division Chief – Operations (Print)

Division Chief – Operations (Signature)

Division Chief – Training (Print)

Division Chief – Training (Signature)

FREMONT FIRE DEPARTMENT

UAS Observer Sign-Off Sheet
Rev. 02/12/17

FFD-

PRE-FLIGHT CHECKLIST



FREMONT FIRE DEPARTMENT UAS Pre-Flight Checklist

Arrival Checklist

- ☐ If daytime and operating out of back of vehicle, point vehicle into the sun.
- ☐ File NOTAM
- ☐ Check distance to nearest airport and/or controlled airspace using smartphone or tablet app.
- ☐ If required, use VHF aviation transceiver or telephone to contact ATC (closer than 5NM.)
- ☐ Inform tower of UAS ops, location, and max height of flight

Preflight Checklist

- ☐ Remove transmitter
- ☐ Transmitter "ON"
- ☐ Toggle switch in "P" position
- ☐ iPad "ON"
- ☐ Connect Controller to iPad
- ☐ Remove UAV from case
- ☐ Gimbal lock and lens cap removed
- ☐ Micro-SD card installed
- ☐ UAV battery installed/full
- ☐ Place UAV in clear, safe launch zone for "Return to home"
- ☐ UAV battery "ON"
- ☐ Positive Connection to Controller (green light)
- ☐ DJI app connected to camera
- ☐ If needed, make all connections to the monitor in the back of the Tahoe
- ☐ Satellite connections verified
- ☐ Calibrate GPS

- ☐ Charge levels safe for flight
- ☐ Ensure home is set
- ☐ Takeoff
- ☐ Follow "After takeoff Checklist"

After Takeoff Checklist

- ☐ Hover approximately ten (10) feet above the ground to confirm UAV is under control
- ☐ Verify all controls operate correctly
- ☐ Landing gear "Up" (Inspire)

Pre-Landing Checklist

- ☐ Camera up
- ☐ Landing gear "down" (Inspire)
- ☐ Video Recorder Stopped
- ☐ Landing Zone Clear/Safe

Post-Landing Checklist(Returning to Flight)

- ☐ Battery Removed/Replaced
- ☐ Positive Connection to Controller
- ☐ DJI app connected to camera
- ☐ Takeoff
- ☐ Follow 'After takeoff Checklist'

End of Ops Checklist

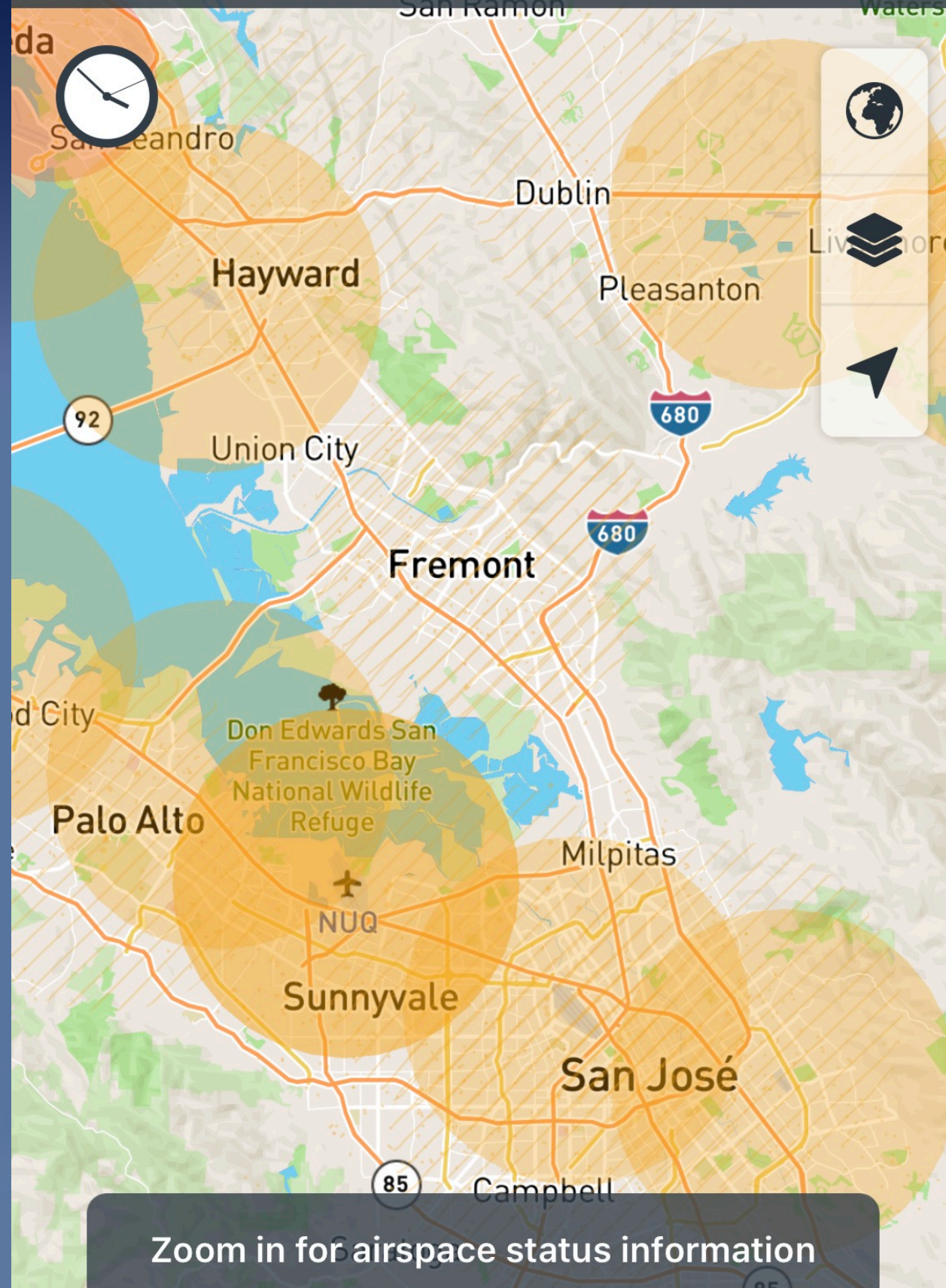
- ☐ Battery "Off"
- ☐ Controller "Off"
- ☐ iPad "Off"
- ☐ Secure SD card (Evidence)
- ☐ Notify Tower- End of Operations
- ☐ Secure all equipment



AIRMAP



Tap & hold on map to create a flight and receive Traffic Alerts



Zoom in for airspace status information

DEPLOYMENT REPORT



FREMONT FIRE DEPARTMENT UAS DEPLOYMENT REPORT

RMS Incident number	Mission Date	Mission Time	Day of Week	NOTAM filed	
Location of Occurrence / Business Name / City, County			Shift	Battalion	
Activity Type (choose one)			Weather Conditions (choose all that apply)		
<input type="checkbox"/> Assist Other Agency <input type="checkbox"/> CBRNE Incident (Chemical, Biological, Radiological, Nuclear, & Explosives) <input type="checkbox"/> SOTF Assist <input type="checkbox"/> FPD Assist <input type="checkbox"/> Disaster Management <input type="checkbox"/> Emergency Response <input type="checkbox"/> Enhance Situational Awareness <input type="checkbox"/> Fire <input type="checkbox"/> Lost Boater <input type="checkbox"/> Missing Person <input type="checkbox"/> Search & Rescue <input type="checkbox"/> Special Event <input type="checkbox"/> Traffic Collision <input type="checkbox"/> Training <input type="checkbox"/> Water Rescue <input type="checkbox"/> Other			<input type="checkbox"/> Daylight <input type="checkbox"/> Darkness <input type="checkbox"/> Dawn <input type="checkbox"/> Dusk <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Foggy <input type="checkbox"/> Raining <input type="checkbox"/> Other (Specify): <input type="checkbox"/> Calm <input type="checkbox"/> Windy (Specify Wind Speed): mph		
Operation Information					
Preplanned Operation: <input type="checkbox"/> (choose one)		Flight Time		Requesting Department/ Supervisor	
Emergency Deployment: <input type="checkbox"/>					
UAV Flown Pilot		Observer		Date	Time

FAA REQUIRED REPORTING



FAA Report
2017-01-01 to 2017-05-10

Fremont Fire Department
3300 Capital Ave
Fremont CA 94538 US

Flying time in this period: 10:26:38

Date	Duration	UAV	Location
2017-04-15	00:11:08	N#: / DJI - Inspire1	Stevenson Boulevard, Newark Stevenson Boulevard Newark California 94538 US (37.506149043741, -121.99590371376)
Project/Job Reference:Fire			
Operation Type: VLOS Night Flight: No Controller Serial #: W13DD122060295			
Pilots: Rich Dickinson [Pilot], Doug McKelvey [Visual Observer], Pilot info:			
Lost link events: no event.			
Nb landing: 1 Travelled distance: 5101.71 feet Max altitude: 446.19 feet Equipment onboard: Inspire 1-1 (S#:7421163712951)			
Notes: This flight was for a working fire at an auto auction involving multiple vehicles.			

Date	Duration	UAV	Location
2017-04-15	00:02:24	N#: / DJI - Inspire1	Stevenson Boulevard, Newark Stevenson Boulevard Newark California 94538 US (37.506149043741, -121.99590371376)
Project/Job Reference:Fire			
Operation Type: VLOS Night Flight: No Controller Serial #: W13DD122060295			
Pilots: Rich Dickinson [Pilot], Doug McKelvey [Visual Observer], Pilot info:			
Lost link events: no event.			
Nb landing: 1 Travelled distance: 75.46 feet Max altitude: 55.77 feet Equipment onboard: Z-3 Camera (S#:0ANDDI13010291), Inspire 1-6 (S#:5381163512469)			
Notes: This flight was for a working fire at an auto auction involving multiple vehicles. The Drone Name from the log file is: 'FFD Inspire 1'. Add it on your drone inventory to set automatically the Drone in future log import. The Battery Serial# from the log file is: '1163512469'. Add it on your battery inventory to set automatically the Battery in future log import.			

Date	Duration	UAV	Location
2017-04-10	00:09:34	N#: / DJI - Inspire1	Decoto Road, Centerville District Decoto Road Fremont California 94555 US (37.57147981131, -122.03064886079)
Project/Job Reference:Fremont PD assist.			
Operation Type: VLOS Night Flight: No Controller Serial #: W13DD122060295			
Pilots: Jeff Kleven [Pilot], Gary Ashley [Visual Observer], Pilot info:			
Lost link events: no event.			
Nb landing: 1 Travelled distance: 1276.25 feet Max altitude: 62.34 feet Equipment onboard: Inspire 1-2 (S#:53811635512444), XT Gimbal (S#:0266380-08B0011721)			
Notes: This flight was for a Fremont PD assist during the search for a shooting suspect. The Drone Name from the log file is: 'FFD Inspire 1'. Add it on your drone inventory to set automatically the Drone in future log import. The Battery Serial# from the log file is: '1163512444'. Add it on your battery inventory to set automatically the Battery in future log import.			

Date	Duration	UAV	Location
2017-04-10	00:00:56	N#: / DJI - Inspire1	Decoto Road, Centerville District Decoto Road Fremont California 94555 US (37.57147981131, -122.03064886079)
Project/Job Reference:Fremont PD assist.			
Operation Type: VLOS Night Flight: No Controller Serial #: W13DD122060295			
Pilots: Jeff Kleven [Pilot], Gary Ashley [Visual Observer], Pilot info:			
Lost link events:			

RECENT UAS EVENTS

- Vehicle into the water, Niles Canyon on 1/22/17
- Large area search, Niles Canyon on 1/23/17 through 1/29/17
- Missing kayaker, SF bay on 1/24/17
- PD assist for accident investigation on 2/11/17



RECENT UAS EVENTS

- Body in the water, SF bay on 2/13/17
- Hazardous material spill, south Fremont on 3/4/17
- Missing elderly person, Niles on 3/20/17
- Vehicle in the water 4/5/17



RECENT UAS EVENTS

- Structure fire, Niles on
- PD assist, officer involved shooting on 4/10/17
- Auto yard fire on 4/15/17
- Structure fire, Irvington on 4/21/17



THE CAMERAS

FPD FI IR



POLICIES

"The use of the UAS potentially involves privacy concerns. Personnel will consider the protection of individual civil rights and the reasonable expectation of privacy as a key component of any decision made to deploy the UAS"

FPD Policy: www.fremontpolice.org/policies

Q & A

